or in the form of myriads of separate organisms, as the globigerinæ and ventriculites of the chalk. The rhizopods, like the corals of a shallower zone, form huge accumulations of carbonate of lime, and it is probably to their agency that we must refer most of those great bands of limestone which have resisted time and change, and which come in here and there with their rich imbedded lettering, to mark, like milestones, the progress of the passing ages."

The following passage, referring to another aspect of the question, was published in the 114th Number of the "Proceedings of the Royal Society":—

"The vitreous sponges along with the living Rhizopods and other Protozoa which enter largely into the composition of the upper layer of the chalk-mud, appear to be nourished by the absorption through the external surface of their bodies of the assimilable organic matter which exists in appreciable quantity in all sea-water, and which is derived from the life and death of marine animals and plants, and, in large quantity, from the water of tropical rivers. One principal function of this vast sheet of the lowest type of animal life, which probably extends over the whole of the warmer regions of the sea, may possibly be to diminish the loss of organic matter by gradual decomposition, and to aid in maintaining in the ocean the 'balance of organic nature.'"

I cannot at present enter into detail, as the whole subject of the conditions of life at great depths will be fully discussed in the second part of the preliminary report to the Royal Society on the *Porcupine* Expedition. I may mention, however, that the much more extended researches of the past summer have increased our confidence in the general accuracy of our former conclusions; while careful analyses by the physicists who accompanied the expedition have proved the existence in the water at all depths of a very appreciable and tolerably constant proportion of organic matter in a condition suitable for assimilation by animal organisms. WYVILLE THOMSON

January 7

MY friend Mr. J. Gwyn Jeffreys informs me that he is not answerable for the postscript to his letter, a sentence in which I noticed in a letter published by you in the last number of NATURE. Will you kindly insert this statement.

Lee, January 10 P. MARTIN DUNCAN

[The postscript was editorial, and so appears on the face of it.]

NOTES

IT was announced by Mr. Lockyer at the meeting of the Royal Astromonical Society, on Friday last, that the great refractor of 25 inches aperture, constructed by the Messrs. Cooke, of York, is so near completion that it will be erected in the observatory prepared for it at Gateshead early next month. The completion of this magnificent instrument, with which Mr. Newall has endowed science, marks an epoch in astronomy. Mr. Newall has in fact done what the French Government has already done, and what our Government ought to have done; he has furnished observers with an instrument capable of grappling with the physical problems which have now to be solved—one on a level with our present requirements; and we doubt not that when it is once at work, the wish of its owner, that science may be advanced by it, will be amply fulfilled.

WE are informed that the Senate of London University have proposed to establish a Faculty of Science.

THE last number of the journal of the German Chemical Society contains a biographical sketch of the late Professor Graham, in which his scientific merits are more fully analysed than in the interesting sketch lately published by Professor Williamson in the columns of NATURE. Professor Hofmann, the author of the German biographical notice, has added a photograph of the late Master of the Mint, and an autographic copy of a letter of particular interest to the society. It runs as follows: —"4, Gordon Square, London, Dec. 28, 1868. My dear Hofmann,—I am much gratified by the receipt of your kind letter, and have since received the official intimation of my election as an honorary member of the Berlin Chemical Society over which you preside, which I esteem a high compliment and great honour. I have written a line to Messieurs the secretaries in acknowledgment, which I beg you to forward to them. There is a communication of mine before the Royal Society at present, which I believe will amuse you, or at least the hardiesse of the thing will surprise. What do you think of Hydrogenium, a white magnetic metal of the specific gravity 2?—I remain, dear Hofmann, sincerely yours, THOS. GRAHAM."—On Saturday, January 8, this society gave a dinner to Professor Hofmann, on his retiring from the presidency. The presence of a great number of the celebrities of the town added to the significance of this meeting. Professor Magnus (who acted as chairman on the occasion), Dove, Virchow, Rose, Dubois-Raymond, Kronecker, Curtius, and others, as also some of the Ministers of State, the American Ambassador (Mr. Bancroft), &c., honoured the meeting with their presence, and partly with their speeches. A great number of the foreign members sent messages from England and France, or from distant parts of Germany. The following telegram was received from M. Dumas, at Paris:—"Félicitations et vœux! Longue prospérité à la société! Longue vie à Hofmann! Votre fête est la fête de famille des chimistes du monde entier, qui tous l'admirent et l'aiment." A photolithograph representing Dr. Hofmann, the discoverer of compound Ammonium, as Jupiter Ammon, surrounded by a halo of Aniline colours, was distributed and explained by the artist, and a hymn to Aniline, composed for the occasion, gave a humorous tone to the latter part of the festival.

ALL readers of the "Origin of Species" are aware that the theory now universally (and rightly) known as "Darwinian," was independently conceived and thought out by a naturalist who knew nothing of Darwin's views of the operation of natural selection, and who was at that time thousands of miles away from England. The English public are therefore not likely to forget that to Mr. Alfred Wallace, as well as to Mr. Darwin, belongs the distinction of having discovered "a new idea, a new genus of thought." In Germany, where Darwinism has excited such profound interest, the claims of Mr. Wallace have been somewhat overlooked by the distinguished men who have expounded the theory of natural selection. This has now been rectified by the publication of a pamphlet entitled "Charles Darwin und Alfred Russell Wallace," in which Dr. A. B. Meyer reprints the papers by which the theory was first made known; narrates the circumstances of their publication; and gives slight sketches of the lives of their authors. Dr. Meyer adds to these biographical sketches, lists of the writings of their subjects. Such lists are sometimes not brought down to so late a date as they should be; but in the case of Mr. Wallace, so far is this from being the case, that we see noted as published in the pages of NATURE an article on Geologic Time, which we regret to say we have not yet been able to lay before our readers, owing to the extraordinary pressure upon our columns.

PROFESSOR MAYER was elected, at the meeting of the French Academy on January 10, a correspondent of the section of Physics in place of the late Prof. Matteucci. Of 47 votes, Prof. Mayer received 40; of the remainder, 5 were given to Prof. Kirchhoff, and 1 each to M. Ångström and Sir W. Thomson. We are indebted to the *Revue des Cours Scientifiques* for the following information with regard to vacancies in the lists of corresponding members of the various sections of the Paris Academy of Sciences. The Astronomical section has four corresponding members to replace, namely, Enke, Admiral Smyth, Petit, and Valz; but as the most recent vacancy occurred so long ago as 1867, it is probable that the section considers that the number of places for corresponding members exceeds that of the foreign and provincial astronomers worthy of the honour. In the Physical section, into which, as our readers are aware, Prof. Helmholtz of

Heidelberg and Dr. Mayer of Heilbronn, have recently been elected, there is still a vacancy caused by the death of Principal Forbes, which took place in December 1868. In the section for Geography and Navigation no successor has yet been appointed to M. A. d'Abbadie, elected *membre titulaire* in April 1867. In the Chemical section there are two vacancies, that of Berard of Montpellier, who died in June last, and that of Prof. Graham, the Master of the Mint, who died in September. There are likewise two vacancies in the Mineralogical section, which includes the Geologists and Palæontologists. They were occasioned by the promotion of Sir Roderick Murchison to the rank of Foreign Associate, and the death of M. Fournet of Lyons. M. Harrman has been nominated by this section for the first place; Dr. W. H. Miller of Cambridge will probably obtain the second. Mr. Dana is, however, also spoken of; likewise two French geologists, M. Lory of Grenoble and M. Leymerie of Toulouse. The Zoological and Anatomical section has three *fauteuils* to dispose of, those of Quoy of Brest, Carus of Dresden, and Purkinje of Prague. One of them will in all probability be assigned to Prof. Huxley. Lastly, there are two vacancies in the Medical section, those of Panizza of Pavia and Sir W. Lawrence. Prof. Lebert of Breslau will almost certainly be nominated by the section for one of the vacancies.

THE Chancellor of the North-German Confederation has presented to the Federal Council the report of the Scientific Commission on the best means of observing the transit of Venus in 1874. The detailed report proposes to send two expeditions to different points of the northern, and two others to different localities in the southern hemisphere.

THE third volume of Dr. Percy's admirable "Metallurgy" will shortly be issued. There will still be another volume to complete the work.

THE Royal Irish Academy at their last meeting approved of some alterations in the bye-laws proposed by the Council. By these alterations the Council for the future will be divided into two Committees: one of Science, consisting of eleven members, and one of Polite Literature and Antiquities, consisting of ten members. The Committee of Publication to consist of four members from each of the Committees of Council. This change will very much simplify the management of the Academy. The first election under the new bye-laws will take place on the 16th March next, and we trust that at least one biologist may be elected into the Committee of Science. For many years past neither a zoologist nor a botanist has been elected into the Council.

L'Institut has announced that from the beginning of the new year it will open its columns to the discussion of scientific subjects of interest to the public at large. We hold that it is an important part of the work of a weekly scientific journal to afford opportunity for instructing others than scientific workers, and also to afford opportunity for a more careful and thorough sifting of most scientific questions than is possible at the meetings of learned societies or in the pages of periodicals published monthly or quarterly. It is satisfactory to us to find that our views on this head are endorsed by so long established and ably conducted a journal as *L'Institut*. As the space which we can devote to letters is necessarily limited, we take this opportunity of begging that our correspondents will make their communications as short as is consistent with clearness.

IN a paper published in a recent number of the *Journal of the Society of Arts*, Mr. Alexander Wallace expresses his conviction that the cultivation of the silkworm may now be successfully and profitably carried out in England, as the causes which led to the failure of the attempts made by the British, Irish, and Colonial Silk Company some forty years ago have been greatly modified. He advocates the adoption of the oak-feeding silkworm of Japan, Bombex Yama-mai, and thinks that the experience of a few more seasons will show the limits of temperature and locality wherein it may be acclimatised.

HAVING adverted in our number of last week to the view recently maintained by Prof. Huxley that the difference between Celt and Saxon is merely one of language, we think it right to call attention to the rejoinder of a "Devonshire Man," printed in the *Pall Mall Gazette* of Tuesday last. The writer energetically opposes Prof. Huxley's attempt to prove identity of race between the natives of Tipperary and the men of Devonshire. He shows further, that Cæsar was fully alive to the essential difference of character between the Celts and the Teutons, and that he defined those characters in language which for accuracy and precision could not be exceeded in our day. The "Devonshire Man" did not, however, adduce any evidence depending on physical characters in support of his view of the question; probably leaving this powerful weapon to some one who has made a special study of European ethnography.

MR. W. CHANDLER ROBERTS has been appointed Chemist to the Mint. The selection of this gentleman to fill this important office is a good one: many points arise during the working of the precious metals that require careful investigation, and Mr. Roberts will doubtless also continue the valuable researches interrupted by the death of Professor Graham.

WE have received specimens of a new process of photo-mechanical printing, patented by Messrs. Edwards and Kidd, of 22, Henrietta Street, Covent Garden. It seems admirably adapted for the reproduction of the works of the great masters of etching and engraving. We are unable as yet to speak of the process as applied to photographs of landscapes.

THE Royal Danish Society of Sciences has offered the following prizes for scientific memoirs, which may be written in Latin, French, English, German, Swedish, or Danish, and must be sent to the secretary of the Society, Professor J. S. Steenstrup, before the end of the month of October next. A gold medal for a memoir establishing a mathematical theory of some branch of assurance hitherto destitute of any such foundation; a gold medal for an experimental and theoretical essay on the law of Cauchy relating to the dispersion of coloured rays, with especial reference to the number of constants necessary to be introduced into the formula; and the Classen prize of 300 rixd. (about 34*l.*), for an investigation of the movement of the air in a system of ventilation. Full details of the questions, in French, will be found in the "Oversigt" of the Society for 1869, No. 1.

MR. JAMRACH, of St. George's Street East, in a letter addressed to *Land and Water*, gives the following extraordinary list of animals now on sale at his establishment:—"1 pair of South African lions, 1 brown hyena, 1 striped hyena, 8 Tasmanian devils, 1 large rare dasyurus, 8 dasyurus maugeii, 6 ichneumons, 4 banded ichneumons, 1 musk cat, 1 African skunk, 1 pair American black bears, 1 pair zebras, 1 pair imported yaks, 6 llamas, 2 Iceland ponies, a new deer, a Brocket deer, a springbock, a harnessed antelope, 2 female and 1 male Wapiti deer, a female nylghaie, a pair fat-tailed sheep, 10 kangaroos, 1 broad-nosed wombat, 1 pair mouflon, a Formosa pig, 8 large crested porcupines, 4 Java porcupines, 1 Java hare, 4 vulpine phalangers, 2 black phalangers, 1 pacca, 4 baboons, 1 pair large drills, 1 mandrill, 2 Mona monkeys, 1 ringtail monkey, 3 green monkeys, 1 blue fox, 1 pair flying opossums, 1 pair emus, a maraboo, a pair Mexican cranes, a pair Demoiselle cranes, 5 spur-wing geese, 16 pair Carolina ducks, 1 pair Australian wild ducks, 2 pair white peafowl, 1 pair lineated pheasants, sand grouse, Mogadore partridges, a New Zealand rail, large European vulture, 1 black hawk, 1 condor, a female Bateleur eagle, a secretary, 2 caracaras, 1 Australian thick-knee, 1 snapping turtle, 20 grey parrots, 12 green parrots, 20 king lories, 1 China lori, 4 Pennant's parakeets, 3 Roselle's parakeets, 12 large cockatoos, 16 rose cockatels, 5 Leadbeater's cockatoos, 3 Nasicu cockatoos, 1 China cockatoo, 10 pair cockatilles, 4 large white-crested cockatoos, 1 male bloodwing, 1 mealy rosella, 6 ringnecked parakeets, 2 Alexandrine parakeets, 1 dwarf parrot, 2 rare Amazones, 7 pair Carolina parrots, piping crow, 1 mynah, 60 pair African love-birds, 80 nonpareils, 1 hang nest, 1 Indian crow pheasant, 55 pairs St. Helena wax-bills, 60 Virginian nightingales, 20 grey cardinals, 16 popebirds, 20 pair Java sparrows, Wydah birds (yellow-backed, red-shouldered, Cape of Good Hope), Madagascar grosbeaks, zebra waxbills, chesnut finches, Napoleon bishops, common bishops, harlequin doves, zebra doves, Australian doves, necklace doves, 3 blue Australian porphyrios."

WE notice that an individual was examined on Tuesday at Worship Street on the charge of sweating sovereigns. The details of the case, which are of considerable importance to the public, will be watched with interest. It appears that the coins are dissolved by acid, aided by a battery, and that the loss in some cases equals about two shillings in the sovereign.

IN the track of vessels from Australia to China lies an island called Pleasant Island. Previous to 1865, the natives had a bad reputation. A Captain Brown reported favourably of them in that year, and mentioned that he was told that an Englishman was residing there. In August 1868, Captain Hall, of the barque *Glenisle*, was boarded by the island canoes, and two whale-boats, with two Englishmen, one of whom had been twenty-eight years on the island, and had a son eighteen years of age. They told him they tried to visit all ships passing within easy distance, and seemed anxious for it to be known that they could supply ships with pigs and cocoa-nut oil. By his advice they purposed to cultivate potatoes, and gave him *an advertisement* to put in the colonial papers. Unfortunately, this document has baffled all attempts to decipher it, from the faulty writing. The island was stated by them to be nine miles across, and twenty two miles in circumference.

ANTHROPOLOGY AND ETHNOLOGY

[We have been favoured by the Count Marshal of Austria with the following abstracts of the more important papers read at the Innspruck Congress.]

Prof. Semper on the Natives of the Pellew Islands

THESE natives have come to a comparatively rather high degree of civilisation, and have been wronged by being ranked among the primitive savages. Prof. Semper, who has lived several months among them, proves his assertion by a detailed exposition of their political, social, and religious institutions. The residence of the pontiff-king and the house where the chieftains of tribes hold their meetings, are decorated with painted basso-relievos. The traces of a commixture of the natives with the Malayan race are insignificant; they seem, however, to have mixed notably with the Papuans.

Prof. Strobel on the Paraderos of Patagonia

THESE "Paraderos" (from the Spanish verb *parar*, to stay) are accumulations of remnants of repasts, fragments of pottery, unpolished stone-knives, arrow-heads, &c., superficially covered with blown sand. In one of these accumulations a human skeleton, and several skulls of brachy-hypocephalous type, were found. The pottery had evidently been shaped by hand, and burnt hard by an open fire—not in furnaces. The distinction between a Palæolithic and a Neolithic period cannot be maintained with respect to the southern-most portion of South America; no polished stone-implements having hitherto been found south of St. Luis in the centre of the Pampas, although grinding-stones and polishable minerals are not wanting there. The polished stone-implements found at St. Luis may have been imported from Peru. The objects found in the Paraderos must be anterior to the European invasion; neither the Patagonians nor the Indians of the Pampas using at present any stone-weapons, but being armed with lassoes, bolas, and lances. Arrows and bows having gone out of use since the introduction of horses by the Europeans. The Indians of Chaco and the inhabitants of Terra del Fuego, who have refused to use horses, still use arrows as a weapon. Horsemanship seems not to have had any diminishing action on the size of the Patagonians, still conspicuous for tallness; the inhabitants of Terra del Fuego, though no horsemen, being rather of small size. Prof. C. Vogt said that the collections made in South America by Mr. Claray have safely arrived in Europe, and that among them is a human lower jaw of uncommon size. Prof. Seligmann observed that the skeleton of a giant, in the museum of Innsbruck, offers likewise an uncommonly developed lower jaw, a peculiarity mentioned by Prof. Langer as generally connected with gigantic size. Prof. Virchow remarked that the outline of the jaw in question is rather curved than angular.

Prof. Virchow on Comparative Measurements of Crania

IT is uncertain whether the great number of crania found in Denmark in sepultures of the Stone Period, belonged to the persons of rank, or to those immolated to honour them—as Mr. Worsaae concludes from the circumstances under which they have been found. At all events, they must have belonged to inhabitants of the Danish isles, or of their immediate neighbourhood. Ninety-six crania have been extracted from one single sepulture near Borreby. Those from the first part of the Bronze Period, when the dead were buried unburnt, are not abundant. Eschricht and Nilsson agree in ascribing the crania of the Stone Period to Laplanders or Esquimaux. The crania of the Greenlanders are conspicuously Dolichocephalous, not to say Scaphocephalous. The insertions of the temporal muscles are unusually distinct, the temporal ridges reaching beyond the *tubera parietalia;* the root of the nose is very narrow and the eyes very near to each other; the facial portion is more developed than in any other race. The few Dolichocephalous crania found in the sepultures are far from offering any analogy to those of Greenlanders. The Laplanders are known to be a Brachycephalous race, whose outward form is evidently the result of their mode of living. The temporal diameter of the crania of this people is ordinarily very considerable, the root of the nose is very broad, and the middle of the lower jaw conspicuously compressed. The crania from the sepultures do not bear more than a distant resemblance to the type just described. The crania of the Finnic race—abstraction made of individual variations—are relatively Brachy-hypocephalous. The Danish crania here in question may be possibly of Finnic origin, the more, as history proves this race to have spread formerly far more southward in Scandinavia than at present. Two forms may be distinguished among these crania, not so discrepant, howewer, as to indicate the co-existence of two distinct nations, although a commixture between two nations may have taken place. The Slavonians are nearly generally admitted to be Brachycephalous, and the Germans to be Dolichocephalous; the Poles and the Wends, however, make an exception to this rule, being anything but Brachycephalous. Crania from peat-bogs of North Germany exhibited to the Anthropological Congress, held at Paris in 1867, are decidedly Dolichocephalous, not Prognathous, without a decidedly ferocious expression, &c. Those extracted from the Danish peat-bogs exactly resemble them, and have, moreover, the greatest analogy with the crania of the Basques, a nation which (as may be historically ascertained) had spread in ancient times over Southern France and North Italy under the denomination of "Iberians." It results from all this, with some degree of probability, that the nation to which the skulls in the peat-bogs are to be referred was rather of Meridional than of Septentrional origin. Chronological dates, relating to the crania here in question, are still insufficient. At present, no trace of man's existence during the reindeer-period has been ascertained in North Germany. Remains of reindeer have been found in Mecklenburg and lately (probably) in the Uckermark, but not associated with any products of human industry. The co-existence of the Dolichocephali, whose remains have been found in peat-bogs, with the reindeer, is therefore not yet proved, although in some degree probable.